



Name: M. Umer Farooq, Quiz Subject:

## Physics

Time Remaining: 45/45 (Minutes)

Q.1

Test 8 Waves

Physics Unit Wise

A source of sound wave emits wave of frequency  $f$ . If 'v' is speed of sound waves. Then what will be the wavelength of the wave

- A)  $\frac{v}{f}$
- C)  $vf$

- B)  $\frac{v-u}{f}$
- D)  $(v-u)f$

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Correct Answer:

- A
- B
- C
- D

Next



Time Remaining: 44/45 (Minutes)

Q.2

Test 8 Waves

Physics Unit Wise

**The fundamental frequency of a string is proportional to**

- A) Inverse of the length
- B) The diameter
- C) Tension
- D) Density

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.3

Test 8 Waves

Physics Unit Wise

The frequency of an open organ pipe is  $f$ . If one end is closed then its fundamental frequency will be:

- A)  $f/2$
- C)  $f$

- B)  $3f/4$
- D)  $2f$

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.4

Test 8 Waves

Physics Unit Wise

The length of a string is 1m, tension in it is 40N and mass of the string is 0.1 kg. Then the velocity of transverse waves produced in the string will be:

- A)  $400 \text{ ms}^{-1}$
- B)  $180 \text{ ms}^{-1}$
- C)  $80 \text{ ms}^{-1}$
- D)  $20 \text{ ms}^{-1}$

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.5

Test 8 Waves

Physics Unit Wise

When an observer is approaching a stationary source with a velocity  $v_o$  then the apparent frequency observed by him will be:

A)  $\frac{v}{v+v_o} f$

B)  $\frac{v}{v_o} f$

C)  $\frac{v+v_o}{v} f$

D)  $\frac{v_o}{v} f$

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Correct Answer:

 A  B  C  D

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Time Remaining: 44/45 (Minutes)

Q.6

Test 8 Waves

Physics Unit Wise

If velocity of sound in air be  $350 \text{ ms}^{-1}$ , then the fundamental frequency of an open pipe of length 50 cm is:

- A) 175 Hz
- B) 350 Hz
- C) 700 Hz
- D) 500 Hz

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.7

Test 8 Waves

Physics Unit Wise

The ratio of phase difference and path difference is:

A)  $2P$ B)  $\frac{2\pi}{\lambda}$ C)  $\frac{\lambda}{2\pi}$ D)  $\frac{\pi}{\lambda}$ 

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Correct Answer:

A  B  C  D

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Time Remaining: 44/45 (Minutes)

Q.8

Test 8 Waves

Physics Unit Wise

When a light ray passes through one medium to another

- A) Its wavelength changes
- B) Its frequency changes
- C) Both A and B change
- D) None of these

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 44/45 (Minutes)

Q.9

Test 8 Waves

Physics Unit Wise

**Doppler Effect is used to monitor blood flow through major arteries by ultrasound waves of frequency.**

- A) 5 Hz to 10 Hz
- B) 5 MHz to 10 MHz
- C) 5 kHz to 10 kHz
- D) 5 GHz to 10 GHz

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Correct Answer:

- A
- B
- C
- D

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Time Remaining: 43/45 (Minutes)

Q.10

Test 8 Waves

Physics Unit Wise

The fixed ends of a vibrating string act as

- A) Antinodes
- B) Overtone
- C) Nodes
- D) Harmonics

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Correct Answer:

- A
- B
- C
- D

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Time Remaining 45 (Minutes)

Test 8 Waves

Physics Unit Wise

Two waves having same frequency travelling along same line in opposite direction, will produce

- A) interference
- B) beats
- C) stationary waves
- D) Doppler's effect

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Correct Answer



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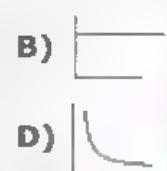
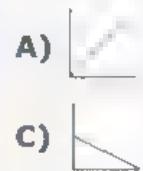
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Q12

Test 8 Waves

Physics Unit Wise

Which graph represents the variation of waves  
wave length with speed



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Q12. Which graph represents the variation of waves  
wave length with speed

Touch Answer



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Time Remaining 45 (Minutes)



Test 8 Waves

Physics Unit Wise

Velocity of sound on free space at 0°C

- A) 332 m/s
- B) 224 m/s
- C) 76 m/s
- D) zero

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Touch & Answer



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Time Remaining: 45 (Minutes)



Test 8 Waves

Physics Unit Wise

**Velocity of sound increases twice of its value at 0°C when temp increases**

- A) 313 °C
- B) 819 °C
- C) 859 °C
- D) 80 °C

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Correct Answer



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Time Remaining: 45 Minutes

Q15

Test 8 Waves

Physics Unit Wise

**Wavelength is defined as distance between two particles of medium having a phase difference**

A)  $\frac{\pi}{2}$  rad

B)  $\pi$  rad

C)  $\frac{3\pi}{2}$  rad

D)  $2\pi$  rad

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Time Remaining 45 (Minutes)



Test 8 Waves

Physics Unit Wise

The increase in the velocity of sound for each 1 °C increase in temperature in air is

- A) 61 m/s
- B) 6.1 m/s
- C) 0.61 m/s
- D) 6.1 cm/s

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Time Remaining 45 (Minutes)



Test 8 Waves

Physics Unit Wise

A sound wave has a  $\lambda$  in air at  $17^{\circ}\text{C}$  at  $27^{\circ}\text{C}$ , a wave

A)  $\lambda = \sqrt{\frac{17}{27}}$

B)  $\lambda = \sqrt{\frac{27}{17}}$

C)  $\lambda = \sqrt{\frac{290}{300}}$

D)  $\lambda = \sqrt{\frac{300}{290}}$

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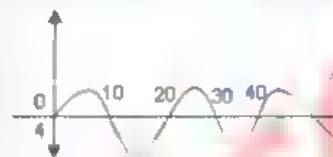
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Test 8 Waves

Physics Unit Wise

The wavelength of the wave shown

- A) 8
- B) 10
- C) 20
- D) 30



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Correct Answer:



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Time Remaining 45 (Minutes)



Test 8 Waves

Physics Unit Wise

Which one of the following properties of sound is not affected by change in temperature

- A) Amplitude
- B) Frequency
- C) speed
- D) Wavelength

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Time Remaining: 45 (Minutes)

Test 8 Waves

Physics Unit Wise

If two waves of amplitude 'a' produce a resultant wave of  $2a$  amplitude, then they have phase difference of

- A)  $0^\circ$
- B)  $90^\circ$
- C)  $120^\circ$
- D)  $180^\circ$

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Test 8 Waves

Physics Unit Wise

**Motion of electron around the nucleus is an example of**

- A) Linear motion
- B) Simple harmonic motion
- C) Angular motion
- D) None of these

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Time Remaining: 41/45 (Minutes)



Test 8 Waves

Physics Unit Wise

**When two wave of same frequency and constant phase difference interfere there is**

- A) creation of energy
- B) Loss of energy
- C) Redistribution of energy
- D) Redistribution of energy with its total value remaining same

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Correct Answer:



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Time Remaining: 41/45 (Minutes)



Test 8 Waves

Physics Unit Wise

At the open end of an organ pipe

- A) Nodes are formed
- B) Anti nodes are formed
- C) Nodes or anti-nodes are formed
- D) None

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100% Marks  
Grade Level: Grade 10

Correct Answer:



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Time Remaining: 41/45 (Minutes)



Test 8 Waves

Physics Unit Wise

A 200 wave pass through a point in the medium in 1sec with a speed of 20m/s then wave length

- A) 20m
- C) 400m

- B) 2m
- D) 0.1m

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Time Remaining: 41/45 (Minutes)



Test 8 Waves

Physics Unit Wise

In a standing wave  $\lambda = l$  where  $l$  is length of string, the no. of loops on string are

- A) 1
- B) 2
- C) 3
- D) 4

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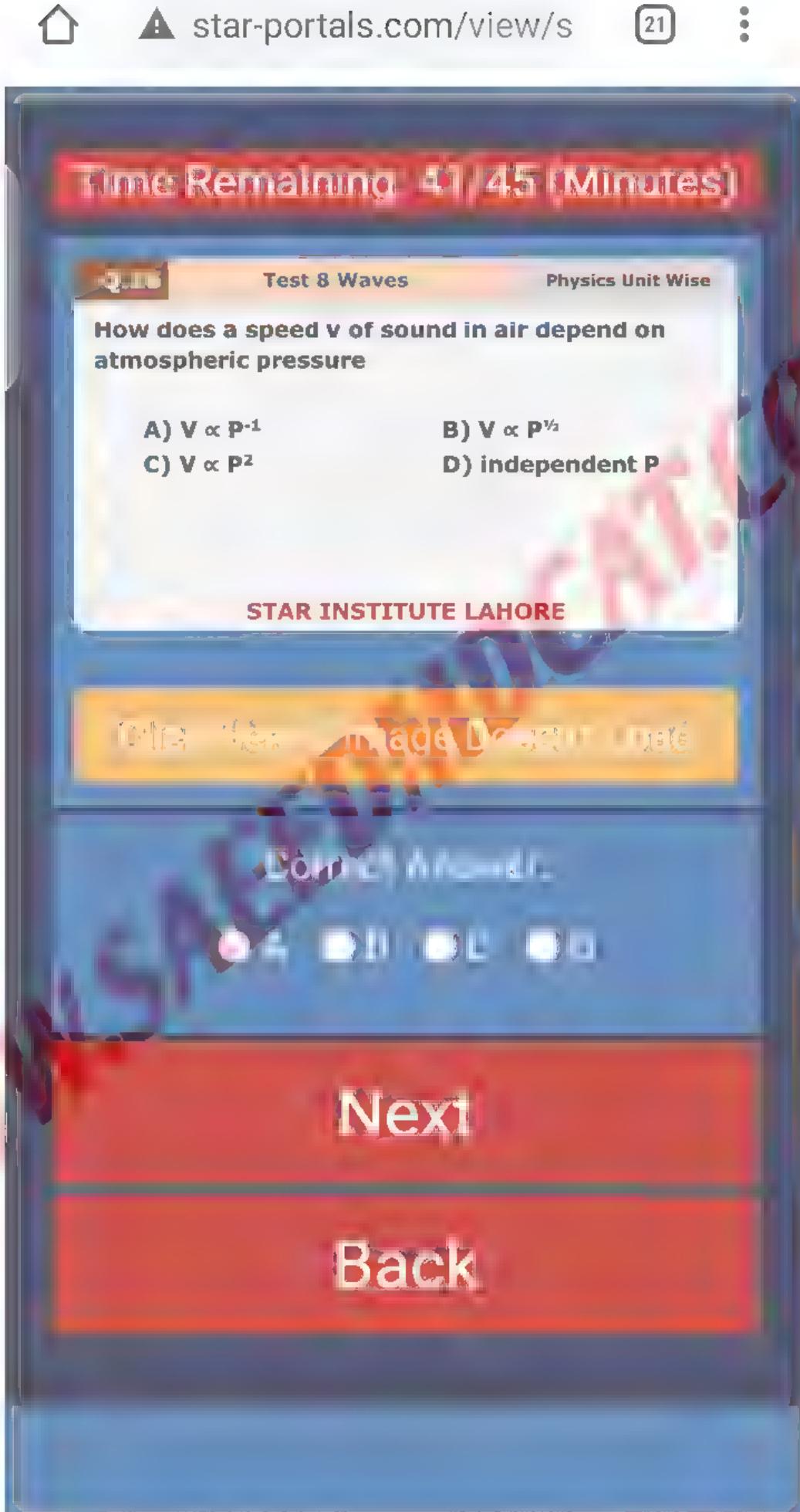
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Correct Answer



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Time Remaining: 41/45 (Minutes)



Test 8 Waves

Physics Unit Wise

The ratio of speed of sound in moist air to that dry air is always

- A) Greater than one
- B) Equal to one
- C) Less than one
- D) Zero

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100% Marks Grade A+ Unit Test

Correct Answer



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Time Remaining: 41/45 (Minutes)

Test 8 Waves

Physics Unit Wise

Air column in a pipe closed at one end is in resonance with a tuning fork of frequency 264 Hz. If the velocity of sound is  $332 \text{ ms}^{-1}$ , then the length of air column is appropriately:

- A) 31.4 cm
- B) 62.5 cm
- C) 93.8 cm
- D) 125 cm

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Correct Answer:



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Time Remaining: 40/45 (Minutes)

Q.29

Test 8 Waves

Physics Unit Wise

A stretched wire with clamped ends has a fundamental frequency of 1000 Hz. What will be the new fundamental frequency if the tension in the wire increase by 2 times?

- A) 980 Hz
- B) 1020 Hz
- C) 1010 Hz
- D) 1410 Hz

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Correct Answer:

- A
- B
- C
- D

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## Physics

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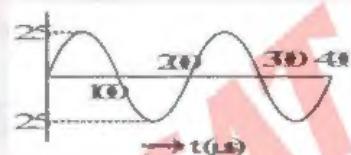
Q.30

Test 8 Waves

Physics Unit Wise

The diagram below represents the variation with time of displacement of a point in air through which a sound wave is travelling at  $340 \text{ ms}^{-1}$ . What is the frequency of the wave?

- A) 1.7 Hz
- B)  $5.0 \times 10^3 \text{ Hz}$
- C)  $1.6 \times 10^4 \text{ Hz}$
- D)  $3.1 \times 10^4 \text{ Hz}$



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Correct Answer:

- A
- B
- C
- D

Submit Quiz

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## Waves #02

### Answer key

1 A 2 A 3 A 4 D 5 C 6 B 7 B  
 8 A 9 B 10 C 11 C 12 A 13 B 14 B  
 15 D 16 C 17 C 18 C 19 B 20 A 21  
 22 D 23 B 24 D 25 B 26 D 27 A 28 A  
 29 D 30 B

MCQ #04  $v = \sqrt{\frac{F}{m/l}} = \frac{40}{10 \text{ kg}} \sqrt{400} = 20 \text{ m/s}$

MCQ #06  $f' = f \frac{nv}{2l} = \frac{1 \times 350}{2 \times 0.5} = 350 \text{ Hz}$

$2\pi$  - phase difference  
 wave length  
 Path difference

MCQ 10  $v = f \lambda$   $\lambda = \text{same}$   $v$

MCQ 13 Sound not travel in vacuum due to its mechanical nature

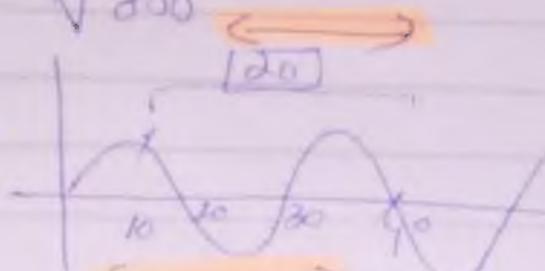
MCQ 11  $T' = n^2 T = (2)T = 4 \times (0^\circ) = 4 \times 273 \text{ K}$   
~~= 26~~  $1092 - 273 = 809^\circ$

MCO 17  $[V = f \lambda] \lambda = 5 \text{ m}$

$\lambda = \sqrt{T^3}$  Just As speed of Sound

$$\lambda_1 = \sqrt{290}$$

$$\lambda_2 = \sqrt{300}$$



MCO 18

$$V = f \lambda \quad \lambda = \frac{V}{f} = \frac{200}{10} = 20 \text{ m}$$

MCO 25  $\lambda = 2 \text{ loop} \cdot \frac{20}{n}$

$$10 \lambda = 1 \text{ m} \quad \lambda = \frac{1}{10} \text{ m} = \frac{2}{n}$$

$$\lambda = \frac{V}{f} = \frac{1}{10} = \frac{1}{4F} = \frac{1}{4 \times 264} = \frac{1}{332} \text{ m}$$

$$\text{Ans} \approx \frac{1}{625} = \frac{1}{332} \quad \frac{1}{4 \times 264} = \frac{1}{3}$$

$$\text{MCO 29} = f \lambda \sqrt{F} \quad \sqrt{27} = \sqrt{78} - \sqrt{1000 \times f \lambda}$$

$$1000 \times 141 \quad \sqrt{1410}$$

MCO 30  $T = 200 \text{ microsecond} \quad f = ?$

$$V = 240 \text{ m/s}$$

$$f = \frac{1}{T} = \frac{1}{200 \times 10^6} \cdot \frac{10^6}{200}$$

$$\frac{10^9}{2} = \frac{10000}{5000} = \frac{10^3}{5 \times 10^3 \text{ Hz}}$$